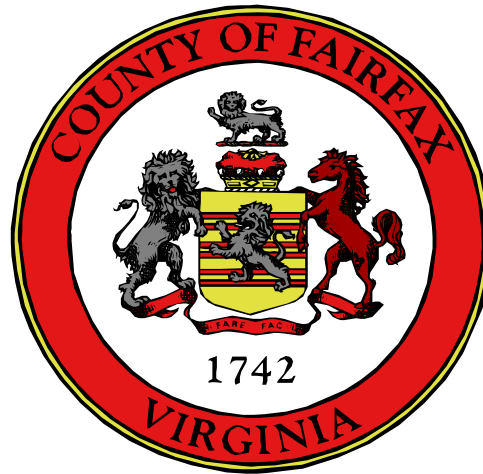


INTERNAL AUDIT REPORT

AUDIT OF COUNTY 1998 RECYCLING RATE



Fairfax County Internal Audit Office

**FAIRFAX COUNTY, VIRGINIA
INTERNAL AUDIT OFFICE
M E M O R A N D U M**

TO: Anthony H. Griffin
County Executive

DATE: March 28, 2000

FROM: Ronald A. Coen, Director
Internal Audit Office

SUBJECT: Report on the *"County 1998 Recycling Rate"*

This is a report on the *"County 1998 Recycling Rate"*. It was performed FY 2000 Annual Audit Plan.

The findings and recommendations of this audit were discussed with the Solid Waste Collection and Recycling Division. We have reached agreement on all of the recommendations and I will follow up periodically until implementation is complete. Their responses are incorporated into the report and the full response is attached at the end of the report. After your review and approval, we will release the report to the Board of Supervisors.

RAC:df

TABLE OF CONTENTS

	<u>PAGE</u>
Introduction	1
Purpose and Scope	3
Methodology	3
Executive Summary	4
Comments and Recommendations	5
Exhibit A: Data Collection and Reporting Comparison of Recycling Rate, EPA vs Virginia Guidelines	8

Introduction

The Division of Solid Waste Collection & Recycling (DSWC&R) is responsible for the collection of refuse within Fairfax County Sanitary Districts and County Departments, and for the coordination of the County's recycling and waste reduction operations. It is also responsible for the administration and program operations of the Solid Waste General Fund Program on behalf of the County. In March 1991, the DSWC&R added recyclable collection services for the approximately 38,000 units it serves in 54 sanitary districts, and County Departments. Private haulers service approximately 281,000 units. Additionally, DSWC&R provides staff and vehicles for program operations at the Solid Waste Reduction and Recycling Center (SWRRC) locations, and for the Solid Waste General Fund Program. In FY 1998, DSWC&R collected 220,572 cubic yards of refuse on County Agency Routes. The administration of the Division Operation Cost Center continues to perform the technical and administration support function for the "Division of Solid Waste Collection and Recycling".

The Department's goal for 1998 is to maintain the recycling rate at or above 25 percent. The recycling rate is determined by dividing the total material recycled (ferrous metals, newspapers, leaves, etc.) by the total Municipal Solid Waste (MSW) stream, which includes tons disposed plus recycled material as reported by Fairfax County disposal sites. The SWRRC operates on a fee basis in which program participants purchase a permit (user fee) for \$185 which entitles the holder to use the disposal and recycling facilities at two sites in the County. During the course of CY 1998, the refuse collection fee for the Residential and General Collection Program was reduced from \$240 to \$210 per household.

The Division of Solid Waste Disposal and Resource Recovery (DSWD&RR) is responsible for the following operations:

- Refuse Disposal, which involves accepting refuse and sending it to the appropriate disposal facility, the Energy Resource Recovery Facility, Prince William County landfill, private debris landfill or ash to the ashfill
- Yard Debris Management, which involves accepting, grinding and distributing wood and leaf mulch and transferring yard debris to composting facilities
- Integrated Waste Management System Elements, which include operation of the I-66 Transfer Station, the two Citizens Disposal Sites, the household hazardous waste site, providing funding from the tipping fee for the countywide recycling program and operation of the scrap metal (white goods) recovery program, hauler permitting, code enforcement and long term solid waste management planning

As a result of the responsibilities of DSWD &RR, the figures available for calculating tonnage information are derived from the reports generated and managed by the Division.

In 1991, the Commonwealth of Virginia's Department of Environmental Quality (DEQ) adopted a policy that requires all Virginia counties to meet a minimum-recycling rate of 25 percent and to report to DEQ annually. In 1996, the requirement to report to DEQ was dropped, however DEQ still mandates that Fairfax maintains at least a 25 percent recycling rate. Moreover, in March 1991, the

Board of Supervisors (BOS) adopted the Business Recycling Plan. The BOS approved mandatory collection of all types of yard debris for recycling and approved weekly collection of certain food and beverage containers and newspapers for recycling in March 1992.

Throughout this report we have used several technical terms. For clarification we are providing a standard definition of these terms as follows:

Recycling Rate – Total weight of recycling materials divided by the total weight of municipal solid waste plus recyclable materials.

Municipal Solid Waste (MSW)– Refers to wastes such as durable goods, nondurable goods, containers and packaging, food scraps, yard trimmings and miscellaneous inorganic wastes from residential, commercial, institutional and industrial sources.

Material Recovery Facility (MRF)– Refers to a facility where materials are sorted into specific categories and processed or transported to processors for manufacturing.

Tipping Fee – Refers to the fee charged trash haulers for disposing MSW.

Landfill Information System (LIS) – Automated system used to record and accumulate information as to the quantities of MSW disposed at County facilities.

Energy Resource Recovery Facility (ERRF)– Refers to a facility whereby MSW is disposed and through the process of burning is converted to electricity.

Tare weight – Refers to the operating weight of a vehicle free of carrying any refuse.

Purpose and Scope

The director of the Division of Solid Waste Collection and Recycling requested us to review the methods used to compile waste stream data to determine if DSWC&R is properly including all quantities of Municipal Solid Waste (MSW) generated in Fairfax County in the recyclable rate calculations. We also reviewed DSWC&R's methodologies for data collection to determine if it is reporting all recyclables generated in Fairfax County. We reviewed tonnage information furnished by Material Recovery Facilities (MRF), haulers and processors in calendar year 1998, and validated DSWC&R recycling rates based on both EPA and the Commonwealth of Virginia guidelines (see Exhibit A).

Methodology

Audit methodology included a review of the Division's Standard Operating Procedures for obtaining recycled tonnage information from businesses. We interviewed several County employees who are involved in the process of collecting and reporting tonnages of recyclable materials to ascertain the procedures being performed, if those procedures comply with office policy, and to provide recommendations on how to improve the process. We conducted several telephonic interviews with recycling coordinators at neighboring jurisdictions to determine if DSWC&R's database of MRF's and/or recycling centers is complete. We performed a site visit of a Material Recovery Facility (MRF) and observed operations in order to see first hand how recyclable is processed/handled prior to being shipped to end use markets. The audit was conducted in accordance with generally accepted government auditing standards.

Executive Summary

The recycling and MSW data collected by the Division of Solid Waste Collection and Recycling is subject to a variety of factors that serve to weaken the accuracy of the recycling rate. Subject to the qualifications discussed in the details, the recycling rate ranges between a high of 37 percent and a low of 27 percent (see exhibit A, attached). The most significant factor that affects rate calculations is a portion of the solid waste generated in Fairfax County is not reported but instead transported and disposed out-of-county. Consequently, the total MSW base used for rate calculations is understated and the reported recycling rate is overstated.

DSWC&R methodology for ascertaining recycled tonnage – sending out source reduction and recycling forms annually to collect data follows Industry practice. However, it is only as reliable as the MRFs that record and report their recycled tonnage information. There is always the possibility for human error in completing the form or that scales are miscalibrated and incorrectly weighing recyclables.

Comments and Recommendations

Subject to the qualifications discussed below, we determined that DSWC&R is collecting complete and accurate data relative to the recyclables. Based on telephonic surveys of recycling coordinators the recycling data is being collected from all major known sources. In order to more accurately report the recycling rate DSWC&R should consider the following:

1. The most significant factor that affects rate calculations is that a portion of the solid waste generated in Fairfax County is not reported but instead transported and disposed out-of-County.

Based on statistical data, DSWC&R staff estimate that in 1998 approximately 200,000 tons of trash were exported out-of-County for disposal. One of the County haulers has provided documented evidence that it has diverted in excess of 118,000 tons of MSW generated in Fairfax County to landfills outside County borders. This amounts to about 21 percent of the total MSW disposed at the ERRF and is significant. The hauler is not disposing of the MSW at the ERRF. Instead the hauler is taking the MSW to its own landfill. Chapter 109 of the Fairfax County Code indicates that all MSW generated in Fairfax County should be disposed at the site designated by the director of the Department of Public Works & Environmental Services /ERRF. By not including the MSW disposed out of the County, DSWC&R overstates the recycling rate by as much as 4.2 percent. The MSW disposed at other landfills amounts to a loss of approximately \$1,000,000 in revenue. During the course of our review, we noted that DSWC&R staff has developed a statistical estimate of the MSW generated in the County, but disposed out-of-county.

Furthermore, since the tipping fee was reduced to \$36 per ton, the tonnage of Fairfax MSW disposed at the Energy Resource Recovery Facility (ERRF) has increased nearly 15 percent over the same period last year. This is a greater increase than mere population growth can justify and lends credence to the significance of the migration issue. By including the 118,000 tons of MSW in the recycling rate calculations it would lower the rate to 31 percent.

Recommendation

We recommend that DSWC&R and DSWD&RR consider adopting the statistical method used by staff or develop a similar methodology to estimate the amount of MSW that is being disposed out-of-county in order to more accurately report the recycling rate in Fairfax County.

Department Response

A three-pronged Action Plan will address the determination of exported MSW quantities.

1. Survey Waste Haulers. Waste haulers are the first point in the disposal chain. Our Survey forms will require all Fairfax County permitted haulers to show MSW and Recycling tonnage collected within the County.
2. Use the DSWCR staff developed Statistical method to estimate exported MSW. The total waste stream is computed to be the quantity of waste material generated in the County as a function of historical County generation rates for the Commercial and residential streams.

3. MSW quantities data from DSWD&RR disposal facilities and large self-haul firms in the County.

The estimate of the quantity of waste being exported out of the County will be based on an analysis of the three sources of data collected.

2. DSWC&R methodology for ascertaining recycled tonnage – sending out source reduction and recycling forms annually to collect data follows Industry practice. However, it is only as reliable as the MRFs that record and report their recycled tonnage information. There is always the possibility for human error in completing the form or that scales are miscalibrated and incorrectly weighing recyclables.

The Division avoids double counting by not counting recyclables from businesses where the recyclables originate; rather they only consider recyclable from the end users' Recycling Markets, Collectors, Processors, and Backhaulers. Upon receipt of the recycling data, it is categorized by type, summarized, and divided by Fairfax County's total waste stream including recycled tonnage based on in-County disposal at the County facilities to develop the annual recycling rate.

When MSW is disposed at the ERRF, respective truck drivers identify its origin to the weighmaster orally and it is noted in the Landfill Information System (LIS). Truck drivers, either intentionally or unintentionally can, and do identify the wrong origin. DSWD&RR spot checks have identified specific instances of truck drivers giving the incorrect origin of their loads.

In discussions with DSWC&R personnel, we were advised that selected haulers have routes originating in Loudoun County and end up being disposed at Fairfax County sites for convenience. Since the tipping fee at Fairfax County's ERRF is the lowest of neighboring jurisdictions, there is a greater likelihood that truck drivers are disposing of MSW from other jurisdictions for the benefit of the lower rate. Additionally, trucks can and do cross County lines during normal daily routes. Current methods of identifying the origin of MSW do not allow truck drivers to identify mixed loads.

Other areas of a lesser concern that can affect the accuracy of the recycling rate include:

- A MRF, processor, or backhauler uses estimates to determine quantities based on a standard estimating measure (i.e. bales, gallons, tire count, etc.) rather than tons.
- Scale weights of both MSW and recyclable are subject to error due to faulty tare weights.
- Vacuumed leaf tonnage is based on a small sample of weighed loads. Load weights can vary due to moisture content.
- Shredded brush tons are based on clock hours of operation of the tub grinder multiplied by an estimate of quantity shred per hour.

Recommendation

To improve the accuracy of the reported origin of MSW disposed at the Energy Resource Facility, DSWD&RR should consider increasing the number of inspections and report violators to the proper authorities and assess fines. DSWD&RR should develop the necessary procedures as deemed appropriate to increase the accuracy and integrity of the reported tonnage of Fairfax MSW.

Department Response

The DSWD&RR have already begun a program of education and communication with the private hauling companies to obtain more accurate data. This plan currently includes:

1. Hauler notification of the need to properly report the source of the MSW through a mailing, and discussion at a recent hauler meeting.
2. Instruct County scale staff to request the waste source of each transaction, and to perform increased inspections.
3. Evaluate terms of the new hauler agreements being developed for FY2001 to determine how this issue could be addressed.

The first two steps of the plan are already in progress or completed. The third item will be addressed; however, the agreement terms will need to be carefully crafted to get the required information, without being so onerous to our customers that they decide not to use our facilities.

FAIRFAX COUNTY INTERNAL AUDIT
AUDIT OF DPW 1998 RECYCLING RATE
DATA COLLECTION AND REPORTING
COMPARISON OF RECYCLING RATE
EPA VS VIRGINIA GUIDELINES

Exhibit A

Material Type	Va. Meth. Tons	EPA Meth. Tons	Difference	Notes
Aluminum Cans	1,281	1,281	-	
Steel Cans	1,951	1,951	-	
Scrap Metal (other)	43,503	43,197	414	(1)
Newspaper	72,431	72,426	(5)	
Cardboard	42,105	42,091	(14)	
Office/Computer Paper	2,704	2,703	(1)	
Telephone Books	-	-	-	
Mixed paper	28,085	28,076	(9)	
Brush	22,761	22,761	-	
Mixed (grass, leaves, brush)	47,642	47,641	(1)	
Glass	15,091	15,090	(1)	
Used Motor Oil	7,305	-	(7,305)	(2)
Food	302	302	-	
Clothes/Textiles	5,023	111	(4,912)	(3)
Plastic	3,169	3,168	(1)	
Chemicals/Solvents	854	854	-	
Tires (includes burned)	3,529	2,827	(702)	(4)
Auto Batteries	414	414	-	
Recovered After Disposal	7,148	-	(7,148)	(5)
			0	
TOTAL MATERIAL RECYCLED	305,298	285,613	(19,685)	
Residential Recycling	151,703	143,991	(7,712)	
Commercial Recycling	153,595	141,624	(11,971)	
Waste Disposed in Fairfax County	561,625	568,485	6,860	(6)
Waste Stream	866,923	854,099	(12,824)	
Recycling Rate	35.2%	33.4%		

**DATA COLLECTION &
REPORTING METHODOLOGY
NOTES TO EXHIBIT A**

1) Scrap Metal-Other

The 415 - ton difference results from the algorithm used to distribute ferrous metals recycled among cities, towns and Fairfax County.

2) Used Motor Oil

EPA does not consider used motor oil as Municipal Solid Waste (MSW).

3) Clothes/Textiles

EPA does not consider "re-use" of material (versus using material as a raw material in manufacturing a new product) as recycling.

4) Tires

EPA does not recognize burning of any material (i.e. recycling into electricity as recycling).

5) Ferrous Recovered after Disposal

EPA does not consider recovery from incinerator ash as recyclable material because incinerator ash is not MSW.

6) Waste Disposed

The 6,860 ton difference is due to the ERRF ferrous and burned tires counted as recyclable that were removed from Municipal Solid Waste (MSW) under Virginia guidelines. Incinerated ferrous and burned tires are not included in the recycling rate but are included in MSW under the EPA guidelines. The difference is due to the algorithm used to distribute ferrous metals and burned tires to cities, towns and Fairfax County.